IN THE CLAIMS:

1. (Currently Amended) A scanning system based on the principle of confocal microscopy, comprising a light source ~~(1)~~, imaging optics ~~(4)~~ for focusing the light ~~(5)~~ emitted from the light source ~~(1)~~ onto an object ~~(6)~~ to be scanned, furthermore comprising an image detector ~~(10)~~ to detect the light ~~(7)~~ of a point ~~(6')~~ on the object ~~(6)~~ that is backscattered from the object ~~(6)~~ and that passes back through the same imaging optics ~~(4)~~ to at least two radiation-sensitive sensor elements ~~(13, 14)~~ (pixel), ~~characterized in that~~ wherein

at least two sensor elements ~~(13.14)~~ are assigned to an object point irradiated via the imaging optics ~~(4, 9)~~,

means ~~(11)~~ for changing the length of the optical path (d) are provided in the beam path between the aperture array ~~(3)~~ and the object ~~(6)~~, which optical distance (d) of the image plane can be varied in a specified manner, and

means are provided which influence the accumulation of charges ~~(Q13, Q14)~~ in the at least two sensor elements ~~(13, 14)~~ from the intensity of light of the observed beam path ~~(7)~~ during the exposure period (T) in such a manner that a correlation with the optical distance (d) of the image plane from the imaging optics ~~(4)~~ is created so that an altitude coordinate (zs) of the object ~~(6)~~ can be reconstructed from the

distribution of the levels of intensity acquired from the at least two sensor elements ~~(13, 14)~~ during an exposure period (T).

2. (Currently Amended) A scanning system as defined in Claim 1, ~~characterized in that~~ wherein said means alter the sensitivity of said sensor elements ~~(13, 14)~~ and/or the translucence in the observed beam path ~~(7)~~ between said imaging optics ~~(4)~~ and said image detector ~~(10)~~, particularly said exposed area of said at least two sensor elements ~~(13.14).~~

3. (Currently Amended) A scanning system as defined in Claim 1 ~~or Claim 2, characterized in that~~, wherein an aperture array ~~(3)~~ is provided for the creation of a brightness distribution on said object ~~(6)~~.

4. (Currently Amended) A scanning system as defined in Claim 3, ~~characterized in that~~ wherein by means of said aperture ~~array (3)~~ a plurality of object points ~~(6')~~ can be detected, there being provided at least as many groups of sensor elements ~~(13, 14)~~ as there are object points ~~(6')~~ to be detected.

5. (Currently Amended) A scanning system as defined in ~~any one of Claims 1 to 4, characterized in that~~ claim 4, wherein means for deflecting ~~(8)~~ said observed beam path ~~(7)~~ are disposed in said observed beam path ~~(7)~~ between said object ~~(6)~~ and said sensors ~~(10)~~.

6. (Currently Amended) A scanning system as defined in Claim 5, ~~characterized in that~~ wherein said deflecting means ~~(8)~~ is a beam splitter.

7. (Currently Amended) A scanning system as defined in Claim 5 ~~or Claim 6, characterized in that~~ , wherein said deflecting means ~~(8)~~ is disposed between said imaging optics ~~(4)~~ and said light source ~~(1)~~.

8. (Currently Amended) A scanning system as defined in Claim 3 ~~or Claim 4 in conjunction with Claim 5 or 6, characterized in that~~ , wherein said deflecting means ~~(8)~~ is disposed between said aperture array ~~(3)~~ and said light source ~~(1)~~.

9. (Currently Amended) A scanning system as defined in Claim 3, ~~characterized in that~~ wherein a moveable aperture ~~(12)~~ is provided which at least partially shades said sensor elements ~~(13, 14)~~ depending on the amount of movement of said aperture.

10. (Currently Amended) A scanning system as defined in Claim 9, ~~characterized in that~~ wherein said aperture ~~(12)~~ is designed such that movement of said aperture ~~(12)~~ causes a reduction of the shading of the at least one sensor element ~~(13)~~ and an increase in the shading of said at least one other sensor element ~~(14)~~.

11. (Currently Amended) A scanning system as defined in Claim 9 ~~or Claim 10, characterized in that~~ , wherein said aperture ~~(12)~~ shades, in an initial position, a part of said sensor elements ~~(13)~~ completely and, in an

end position, another part of said sensor elements ~~(14)~~ completely and, in an intermediate position, shades both a part of certain sensor elements ~~(13)~~ and a part of the other certain sensor elements ~~(14)~~.

12. (Currently Amended) A scanning system as defined in ~~any one of Claims 2 and from 9 to 11, characterized in that~~ claim 11, wherein the degree of shading of said part of said sensor element ~~(13)~~ is complementary to the degree of non-shading of the other part of said sensor element ~~(14)~~.

13. (Currently Amended) A scanning system as defined in ~~any one of Claims 2 to 8, characterized in that~~ claim 2, wherein said means consists of an electronically controlled optical element ~~(25)~~ of variable translucence, in particular an LCD element.

14. (Currently Amended) A scanning system as defined in ~~any one of Claims 3 to 13, characterized in that~~ claim 13, wherein said aperture array ~~(3)~~ is designed for two-dimensional scanning of said object ~~(6)~~.

15. (Currently Amended) A scanning system as defined in Claim 14, ~~characterized in that~~ wherein regulating means are provided for adjusting the position of said aperture array ~~(3)~~ such that regions not imaged in a first scan due to the pulse duty ratio of said aperture array ~~(3)~~ are imaged in a second scan.

16. (Currently Amended) A scanning system as defined in ~~any one of Claims 1 to 14, characterized in that~~ claim 1, wherein said image detector ~~(10)~~ is a line sensor ~~(10.2)~~.

17. (Currently Amended) A scanning system as defined in ~~any one of Claims 1 to 14, characterized in that~~ claim 1, wherein said image detector ~~(10)~~ a flat panel sensor ~~(10.3)~~.

18. (Currently Amended) A scanning system as defined in ~~any one of Claims 1 to 17, characterized in that~~ claim 1, wherein said image detector ~~(10)~~ is in the form of a CCD sensor.

19. (Currently Amended) A scanning system as defined in ~~any one of Claims 1 to 17, characterized in that~~ claim 1, wherein said image detector ~~(10)~~ is in the form of a CMOS sensor.

20. (Currently Amended) A scanning system as defined in ~~any one of Claims 1 to 11, characterized in that~~ claim 1, wherein said sensor elements ~~(13, 14)~~ are disposed on separated image detectors ~~(10, 10')~~ and a beam splitter ~~(24)~~ is provided in the observed beam path which transfers the same image to said second image detector ~~(10')~~, cross-fading between the two image detectors ~~(10, 10')~~ being effected by means of electronic and/or optical auxiliaries during the scanning period (T).

21. (Currently Amended) A scanning configuration as defined in ~~any one of Claims 1 to 12, characterized in that~~ claim 1, wherein at least two sensor elements ~~(13, 14)~~ are used and the sensitivity of one part of said sensor elements ~~(13)~~ increases while that of the other part of said sensor elements ~~(14)~~ decreases with increased adjustment.

22. (Currently Amended) A scanning configuration as defined in ~~any one of Claims 1 to 20, characterized in that~~ claim 1 wherein the average scanning distance of said aperture array ~~(3)~~ is in accord with the desired measuring accuracy.

23. (Currently Amended) A scanning method based on the principle of confocal microscopy, in which light ~~(5)~~ is emitted from a light source ~~(1)~~ onto an object ~~(6)~~ to be scanned, which the light ~~(5)~~ is focused by imaging optics ~~(4)~~, and also in which the light ~~(7)~~ of an object point ~~(6')~~ backscattered from the object ~~(6)~~ and passed back through the same imaging optics ~~(4)~~ is received by an image detector ~~(10)~~ with has at least two radiation-sensitive sensor elements ~~(13.14), characterized in that~~wherein

at least two sensor elements ~~(13, 14)~~ are assigned to an object point illuminated via the imaging optics ~~(4, 9)~~,

the optical distance (d) of the image plane is varied during the exposure period (T) in a specific manner via means ~~(11)~~ disposed in the optical path between the aperture array ~~(3)~~ and the object ~~(6)~~, and

the relationship between the accumulation of charges ~~(Q13, Q14)~~ produced in the at least two sensor elements ~~(13, 14)~~ and representing the intensity of the light in the observed beam path ~~(7)~~ can be modified such that a correlation between said accumulation and the optical distance (d) of the image plane from the imaging optics ~~(4)~~ is produced such that an altitude coordinate (zs) of the object ~~(6)~~ can be reconstructed from the distribution of the levels of intensity acquired by the at least two sensor elements ~~(13, 14)~~ during an exposure period (T).